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JOB AND BILLET ANALYSIS IN THE U.S. NAVY

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Thesis
S9

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JOB AND BILLET ANALYSIS IN THE U. S. NAVY

A THESIS
SUBMITTED TO THE
SCHOOL OF EDUCATION AND
THE COMMITTEE ON GRADUATE STUDY
OF
LELAND STANFORD JUNIOR UNIVERSITY
IN PARTIAL FULFILLMENT
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FOR THE DEGREE
OF
MASTER OF ARTS

By

Frank E. Swanson
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Thesis
S9

PREFACE

This thesis is a description and discussion of job analysis and classification in the U. S. Navy, and of the rating and pay structure for the men who perform these jobs. The discussion is limited to the jobs and ratings of the enlisted branch only and does not include the warrant and commissioned officer group. The material is grouped into its natural divisions and is discussed in the following order: (1) the nature of Navy jobs; (2) billet analysis; (3) the rating structure of the Navy; and (4) job classification.

Many volumes have been written on this subject in official Navy publications, unofficial papers on Navy jobs, and treatises on industrial job analysis and rating. However, as far as is known, no publication exists which adequately covers Navy jobs as outlined above in a comprehensive and easily read and understood manner. Most of the existing publications cover only a part of one of the aspects and do it in such a detailed and technical manner that it is only useful to those who have to perform the detailed work of administering the program. These are difficult to read for the purpose of getting an overview or general picture of the job program and the relationships of its various aspects.

The purpose of this thesis is to discuss the various aspects of Navy job analysis, job classification, and rating structure in a single paper and explain them so their relationships can be easily understood. It is intended primarily for Naval Officers, prospective Naval Officers, and those enlisted men and civilians who are engaged in personnel work in the U. S. Navy. Consequently it is assumed that the reader will have a general working knowledge of the Navy and be familiar with the common naval terms, particularly those used in the rating structure which are peculiar to the Navy alone.

A great deal of work has been done on job analysis and rating in the industrial world and in many cases the problems and principles involved are similar to those in the Navy. The literature on this subject has been reviewed and a discussion of the similarity and differences between naval and industrial jobs has been made at the appropriate places throughout this work.

It is hoped that this paper will give the reader a clearer understanding of Navy jobs in general and of the nature and importance of job analysis and classification in particular. If it does this for all officers and particularly officer candidates, the naval service will be benefited.

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CHAPTER I

THE NATURE OF NAVY JOBS

Introduction

The U. S. Navy is a very large organization, much larger than most industrial or private activities. Its present authorized strength is nearly one-half million officers and men and during the last war it expanded to about three million officers and men. It has ships and stations distributed all over the world and is not concentrated in one state or nation like most large industries. It has many jobs and features which are peculiar to the Navy alone, and are not common to industry or even to the Army. In addition to this, the tools and methods of naval warfare are constantly changing and being improved.

Because of the large, scattered, and specialized nature of the Navy, its administrative organization is also very large and complex. One of the chief divisions of this organization is the Bureau of Naval Personnel. This bureau has to do with the procurement, training, distribution, promotion, pay, and discipline of all naval personnel. All this is necessary to furnish the manpower needed to do the work of the Navy. In order to furnish this manpower

intelligently it is necessary to understand what the Navy has to do and just what the natures of the various jobs are.

This chapter will give a general description of some of the jobs and types of duty that have to be performed by the enlisted branch of the Navy, and their relationship to the mission of the Navy. The nature of Navy jobs will be discussed under the following main categories: (1) warships; (2) shore establishments; (3) other types of naval activities; and (4) the Navy job.

This general understanding of the nature of Navy jobs is necessary before the more specific purpose of this paper, which is job and billet analysis and classification, can be properly understood.

Warships

A modern battleship, with a wartime strength of approximately two thousand five hundred men, is in reality a floating community designed to fight, and is self sufficient in all respects for considerable periods of time. It provides housing for its men and has mess rooms along with the kitchens, bakeries, refrigerated storage for perishable foods, and dry storage for nonperishable foods. Here, one may also find a laundry, tailor shop, cobbler shop, store, soda fountain, and a post office. Recreation facilities such as movies, libraries, and chapel services are also provided. Complete medical facilities including a hospital,

dental clinic, and a pharmacy are provided. In addition to the highly complex propulsion machinery and the shops required to maintain it, a battleship generates its own electricity for light and power and its steam for heating, and distills its own fresh water. Elaborate communication facilities including radio, telephones, and, sometimes, radiophoto equipment are provided as well as many radar sets for navigation, enemy detection, and directing gunfire. All of this is in addition to the complex armament which is the main reason for a battleship's existence. The armament includes all types of guns from twenty-two caliber pistols to sixteen-inch rifles, rockets, torpedoes, airplanes, and bombs.

It is apparent that it is difficult to select any civilian trade that is not represented aboard a modern battleship and, in addition, there are numerous purely seagoing and battle occupations that have no counterpart ashore or in civilian life. This same condition exists on all of the smaller ships of the Navy such as carriers, cruisers, destroyers, submarines, transports, and supply ships, but to a less and less extent as the ships decrease in size and complement. Most of the items listed above are provided on all ships but on the smaller ones one man may do several of the various jobs whereas on a battleship one man may do only a specialized part of one job.

Shore Establishments

The seagoing part of the Navy is the part that actually does the fighting but it requires at least as large an organization ashore to support it. The shore establishments of the Navy are much larger than most people realize. In peacetime there are approximately as many naval personnel at shore establishments as there are afloat. In addition there are a large number of civilians employed at naval shore bases.

Some of the major shore establishments are: the Navy Department at Washington, D. C. with its seven bureaus, the headquarters of the sixteen districts and two river commands, shipyards, air stations, supply depots, hospitals, and naval stations. In addition there are many specialized activities such as the hydrographic office, naval observatory, training schools, model test basin, gun factory, and airplane factory.

All of these establishments need personnel to operate them and it is obvious that the range of jobs is extreme. The Navy needs men capable of filling every conceivable type of job ranging from those requiring highly professional skills, such as doctors, lawyers, engineers, and teachers; through the skilled trades, such as cooks, machinists, and torpedomen; and on down to the common laborer and seaman recruit. Some of these jobs are filled by civilians and others

are performed by warrant and commissioned officers, but many of them are filled by enlisted men and this is especially true in time of war.

Other Types of Naval Activities

In addition to the seagoing Navy and the fixed shore establishments the Navy has other activities of a mobile or temporary nature. One example of this is the naval air commands such as fighter squadrons, carrier squadrons, lighter than air squadrons, and the Naval Air Transport Command. These are usually separate commands that may move from ship to ship or ship to station, but are not a permanent part of the ship or station to which they may be attached.

Construction battalions are another example of such units. These are organized units of about one thousand officers and men who are specialists in engineering and construction work and operate under the Bureau of Yards and Docks. They are used to construct all types of naval facilities overseas and maintain and operate them when they are finished. They are particularly active and useful during wartime when many new bases are required.

Another type of naval activity is represented by the petroleum exploration unit which is now operating in the vicinity of Point Barrow, Alaska. This unit was formed to search for oil in Alaska and will probably be decommissioned when this mission is completed. It is composed of officers

and men, and some civilians, who are experts in this type of work.

The Navy Job

The broad nature of the naval establishment has been outlined above. The nature of the various Navy jobs will now be examined more closely. In civilian employment, a man usually performs a single task or a series of closely related tasks, repeating them day after day on a full-time basis. Thus, a man is a milling machine operator, a file clerk, an eye-ear-nose and throat doctor, a dairy farmer, or a worker in some other vocation or profession which is highly specialized and specific as to duties. However, work in the Navy usually does not fall into so clear-out a pattern. Wherever they may be, Navy assignments involve military as well as technical obligations. That is, all men are expected to perform such duties as standing security watches or maintaining discipline, as required by their respective pay grades, regardless of what their naval ratings or occupations might be. The tasks performed by Navy men particularly aboard ship frequently bear little or no relation to one another and require activity in widely separated fields. To illustrate this more clearly the duties aboard a ship will be discussed.

Shipboard Duties

A ship differs from a shore establishment in that it

has a wider range of operating conditions. It may be berthed in a Navy yard with only "cold iron watches" manned and with most of its crew on leave; or it may be steaming into combat with every man at his battle station. Between these extremes there are many stages of operation and resulting shipboard organizations. Since the crew of the ship at any one time is a fixed number, the ship must meet the various functions expected of it by having most of its crew perform different duties with each different operation. Moreover, a ship must be prepared to operate with efficiency even if casualties occur; this means that each man must be able to perform, in addition to his own duties, some of the duties of other men in order that he can substitute for them if need be. To designate the various duties to which men are assigned, ships prepare what is known as Watch, Quarter, and Station Bills. These are tables or charts listing the various duty assignments and are posted in conspicuous places about the ship. Among the assignments commonly included in Watch, Quarter, and Station Bills are the following.

General Quarters Duties.--When battle is imminent, a ship goes into a condition which is known as "General Quarters," in which all members of the crew man assigned stations to bring the ship to its maximum fighting efficiency. On a Watch, Quarter, and Station Bill, battle duties are usually listed as "Condition I." These duties may be listed

separately from other duties in the bill.

When battle assignments are made, the best qualified men are assigned to the key stations in their respective departments. In nearly all departments except gunnery, there are surplus men available for assignment after key stations have been manned. These surplus men are assigned to gun stations or to other duties not necessarily related to their usual technical duties. Thus, a yeoman may be assigned as a telephone talker, a radioman striker may serve on a gun station, and a fireman may become a passer in an ammunition handling room. A man's battle duties may or may not, therefore, be related to the duties for which he has been primarily trained and on the basis of which he has been assigned to a ship.

Watch Duties.--The work required to operate a ship or maintain it in a materiel condition of readiness for battle continues in peacetime as well as in time of war. The crew is divided into "Watches" in order to distribute this work load, maintain a continuous watch, and provide for the security of the ship. The watch system offers a means of manning the ship either underway or at anchor so as to meet the demands of military necessity; namely, that a stated percentage of the armament can be manned and that the ship can get underway and operate in an emergency even though one or more watches may be away from the ship on liberty. Normally,

men are assigned to duties on watch according to the training they have received. Thus, a radioman is normally assigned a radio watch, a signalman a bridge watch, and so on.

Assignment to security watches is not necessarily carried out on the basis of a man's training or qualifications. These watches are primarily military in nature, since they are concerned with maintaining discipline, observing rules for the prevention of fire, and similar requirements. In this type of watch a seaman might be assigned to duty as a sentry.

A few petty officers may not be assigned specific watches, in order that they may be available on call. The duties of such off-watch personnel are the technical routine duties described below.

Routine Duties.--Each man also has certain routine duties. For some men these duties may simply be the cleaning of living compartments or working spaces, in which event the routine duties require little previous training or skill. Such duties would normally be assigned to seamen. For other men, however, the routine duties may involve maintenance of equipment or even highly skilled repair work. Routine duties of this kind are always closely related to a man's technical skill and training. Thus, a chief gunner's mate will be responsible for the maintenance and repair of all armament in the battery assigned to him, or one of the machinist's mates

will be responsible for the repair of all the refrigeration equipment to which he is assigned.

Miscellaneous and Emergency Duties.--In addition to a man's battle, watch, and routine duties, he may be assigned various miscellaneous or emergency duties. For example, he may man a particular station when a "special sea detail" is set while entering or leaving port. He may have other stations on Fire, Collision, or Boarding Bills, respectively. Whatever their type, these miscellaneous or emergency duties are likely to be related either to the military or technical duties expected of him in his day to day life aboard the ship.

Summary

The U. S. Navy is an extremely large organization and has units or activities distributed all over the world. It consists of many types of activities including fighting and supply ships at sea; administrative headquarters, shipyards, air stations, and schools ashore; and also of mobile units such as airplane squadrons and construction battalions. The Navy also performs very specialized duties such as operating the naval observatory and exploring for oil in northern Alaska.

This huge naval organization requires personnel of all types to keep it operating efficiently, from the highest professional specialist down to the unskilled laborer. All

imaginable civilian professions, trades, and skills are required, and in addition many purely military and naval skills are needed.

The average Navy job is unique in that it usually consists of many duties or jobs in addition to a specialty which each man acquires soon after he enters the service. The nature of these various jobs change with changes in the conditions under which the ship or station may be operating.

The immense task of procuring, training, distributing, and rating the personnel who perform the work of the Navy is the responsibility of the Bureau of Naval Personnel. In order for this to be done intelligently and efficiently it is necessary that a great deal more be known about all naval jobs. In fact it is necessary to know exactly what each man has to do and then classify the various jobs so that they can be readily identified. Men then have to be trained and classified also, so they can be properly assigned to the jobs. The following chapters will discuss billet analysis, ratings, and job classification.

CHAPTER II

BILLET ANALYSIS

Introduction

Because the Navy is such a large organization and requires all imaginable types of work, it is necessary that the personnel procurement, training, and distribution be done in an efficient and systematic manner. To do this requires a detailed knowledge of all the jobs which have to be performed. This detailed job information is obtained by a process known as billet analysis, which is a systematic procedure of studying and recording every detail of work performed in a particular billet or job.

This chapter will introduce billet analysis by defining a few terms associated with the process and then describing the process itself. Industrial job analysis will be discussed briefly and compared with Navy billet analysis. The purpose and use of billet analysis will then be explained. This will be followed by outlining the development, the present status, and the operation of the process.

Definitions

In order to study billet analysis it is necessary to have a clear understanding of the basic terms task, job, and

billet. These are defined here for the convenience of the reader.

Task.--A task is a single operation involved in the performance of work. Usually the work of any man consists of several tasks. Thus, a yeoman may perform several tasks, including typing deck logs, filing correspondence, or taking stenographic records of a summary court-martial. Similarly, inspecting magazines is but one task of a gunner's mate, and repairing a worn pump is but one of several tasks performed by a machinist's mate.

Job.--A job is a recurring task or a group of related tasks performed frequently enough to constitute the basis for personnel actions, such as training, classification, and detailing. Ordinarily a man's assignment will consist of a single job, made up of the major or significant technical tasks of his assignment, and collateral duties. However, it is conceivable that some assignments may include more than one naval job.

Billet.--A billet may be defined as the aggregate of the job or jobs and tasks performed by any one worker in a particular assignment. In civilian terms this is the definition of a position. Thus a man's billet usually consists of the battle, watch, routine, emergency, and miscellaneous duties that are assigned to him at any one time. The rela-

tionship of these duties is explained in Chapter I. In a shore establishment, a billet may consist merely of tasks performed recurrently from day to day on a full-time basis much like a job in civilian life.

To further clarify the above definitions it should be emphasized that in the Navy a job is concerned primarily with a man's technical tasks. These are the tasks which he performs during his routine and watch duties. His general quarters and other duties, as has been pointed out in Chapter I, may or may not be closely related to these technical duties. Moreover, the major or significant technical tasks in a billet are usually those that involve the man's highest skills or responsibilities. For example, most ships have electrician's mates who specialize in the maintenance and repair of interior communications equipment. Although they may do other less technical tasks at various times, their job is that of interior communications electrician. Similarly, most ships have a yeoman whose primary duty is to keep personnel records. Such a yeoman may have an important battle station in the "combat information center" or in a fire control director and may even stand watch on those stations; however, since he has been trained as a personnel yeoman and was assigned to the ship as such, the major and significant technical tasks that determine his job are those of a personnel yeoman.

Billet Analysis

Billet analysis as practiced in the U. S. Navy is a systematic procedure of studying and recording in detail all the work performed in a particular billet or job and all other pertinent information which helps define exactly what the billet is and what the requirements are for a man who is to fill it. The procedure is well standardized and the men who observe and record the information are usually specialists who are well trained in this particular field. However, the analysis can be made by the average officer if the instructions are carefully followed. The observers actually watch the man or men, in the billet which is under study, as they perform their various tasks and jobs, and record the results. Experienced men in the billet are interviewed concerning the problems of their work and the qualifications necessary to perform them.

An outline of the billet analysis schedule form is shown by Table 1 on page 16. Each schedule begins with a section of identification information, which includes the assigned rating, the billet title, the name and rating of the incumbent, the department and division in which the billet exists, and the schedule number. The description of duties which follows is composed of a billet summary giving a concise statement of the duties at battle, cruising, and emergency conditions and a statement of tasks which is a

Table 1

OUTLINE OF THE BILLET ANALYSIS SCHEDULE FORM

A. IDENTIFICATION INFORMATION

1. a. Assigned Rating:
   b. Billet Title:
2. Name:
3. Rate of the Incumbent:
4. Classification:
5. Ship: underway...in port...
   Type:
   Class:
   Number:
6. Shore Station:
   Name:
   Location:
   Type:
7. Department:
8. Division:
9. Field Schedule Number:
10. Analyst:
11. Date:

B. DESCRIPTION OF DUTIES

1. Billet Summary
2. Statement of tasks

C. PERFORMANCE REQUIREMENTS

1. Responsibility
2. Special Job Knowledge and Skills
3. Special Psychological Characteristics
4. Special Physical Characteristics
5. Other Requirements

D. HEALTH AND ACCIDENT HAZARDS

E. DESCRIPTION OF DUTY STATIONS

F. EQUIPMENT, MATERIALS AND SUPPLIES

G. TECHNICAL TERMS AND NOMENCLATURE

detailed breakdown of the duties of the billet. The third major division of the schedule lists the performance requirements, indicating the scope of responsibility of the incumbent as well as the knowledge and skills and the psychological and physical characteristics necessary for proper discharge of the duties. The health and accident hazards, a description of the duty stations, a list of the equipment, materials, and supplies with which the incumbent works, and definitions of technical terms and nomenclature complete the schedule.

The statement of tasks is very detailed and sometimes requires several pages to record. It is recorded in such a way that it can be determined exactly what the incumbent has to know and be able to do. Sketches are sometimes employed to explain details of the work. Sometimes checkoff lists that are used by the incumbent in his regular duties are included in the report to help clarify the duties. In order to indicate the procedure in detail, an example of a typical billet analysis is given below.

Sample Billet Analysis

The following is a complete billet analysis of the division boatswain's billet on an attact transport, as actually made and reported by the Bureau of Naval Personnel.

BILLET ANALYSIS SCHEDULE
BUREAU OF NAVAL PERSONNEL

A. IDENTIFICATION INFORMATION

1. a. Assigned Rating: BMlc
   b. Billet Title: Division Boatswain Billet No. 1211
2. Name: Liles, Lovel Eugene 18 months service

3. Rating of Incumbent: BMlc
4. Classification: USN
5. Ship underway and in port: APA #39
6. Shore Station: No
7. Department: Gunnery
8. Division: First
9. Schedule No. 2
10. Analyst: E. M. Worthen, Lt. (jg) USNR
11. Date: 1 Sept. 1944

B. DESCRIPTION OF DUTIES

1. Billet Summary

Battle

GQ Musters his hatch party at #1 hatch and takes his station near the gear locker where he stands by to supervise the repair of any hoisting gear which may be shot away in the encounter.

1A As Division Boatswain he supervises the activities of forty-five men at the forward three hatches in removing all the deck boats and the handling of cargo from the holds.

Emergency

Fire - musters First Division on the port side of #1 hatch and stands by.
Fire and Rescue - musters at quarters.
Collision - musters his hatch party at GQ on the starboard side of #1 hatch.
Abandon Ship - Assigned to #1 life raft.

Special Sea Detail

Gives close supervision to anchoring and docking procedures under the direction of the Ship's Boatswain or more often under the direction of the Executive Office who either megaphones from the bridge or has his orders amplified from the bridge.

Watches

Stands no watches but is responsible for seeing that P.O's. and assigned seamen on watch lists report promptly to relieve the watch.

In Port

Assists the Chief in close supervision and assignment of tasks in the First Division.

Routine Duties

Has supervisory responsibility for the sweeping, washing, and painting of the First Division area and for the maintenance of

cleanliness in the three forward troop holds aft as far as the superstructure.

2. Statement of Tasks

Battle

SQ Musters his hatch party of fourteen men on the starboard side of hatch #1 (see Battle Bill appended).

- (1) Is on call to assist Repair Party.
- (2) Takes station near tool locker to supply repair gear as needed.
- (3) Supervises the laying out on the hatches of gear to replace any shot away:
  - a. Spare whips
  - b. Topping lifts
  - c. Single-up hook and proper wrenches
  - d. Splicing gear (fids and whipping line)

1A Supervises the activities of forty-five men at three hatches in the procedures of debarkation.

- (1) Eight LCV's and LCVP's are removed from the hatches.

  Sets up assignment and relief lists.
  - a. Supervises use of steadying lines to assure:
    - i Slight strain at all times.
    - ii Shift or fleet smartly on order of hatch captain.
    - iii No overhand turns or belays on cleats.
    - iv Out from under boat; inboard from all cargo going overside.
  - b. Stops winches if wire fouls or becomes buried on drums. This occurs when cable is spooled onto drums without a strain on it (e.g. most often in yard and stay hook-up) and then subsequently a heavy load buries the whip in the loosely spooled cable on the drum. Cable must be unspooled and slight strain applied as respooled.
  - c. Allows no turns on the falls at any time.
  - d. Watches coordination of the men operating the guys. Sees that one releases his guy as rapidly as

the other snubs on the nigger head of his winch and takes up on the other guy. Blocks break and lines part when these guys pull against each other. Usually 90% of strain on blocks is from the poor management of the guys and 10% is from the weight being hoisted.

(2) Unloading cargo.
  a. Personally supervises the application of straps to heavy and special vehicles, e.g. use of spreaders to prevent crushing of sides.
  b. Supervises the placing of tag lines on vehicles for guiding into and out of hatches.

(3) Follows priority sheet on Debarkation Officer's clip board usually placed near hatch for reference in selection of gear to accompany troops and gear to be readied for "on call" transportation to the beach.

Conditions 2 and 3 (day and night steaming):
Stands no watches but is available for prompt relief of watches.

Emergency
Fire - musters division at the port side of hatch #1 and stands by for orders.
Fire and Rescue - musters at quarters.
Collision - musters his hatch party at GQ station on the starboard side of foredeck.
Abandon Ship - assigned to life raft #1.

Routine Duties
(1) Supervises all cleaning in the First Division according to the Cleaning Bill which is drawn up each quarter. Musters and supervises working parties which wash, sweep and paint; wire brush cable; slush cables and lines.

In Port
(1) Inspects to see that all booms are topped up.

(2) Inspects to see that boats are ready to come off hatches and go overside: hooks placed in hoisting rings with tripping line in right position; snubbers are placed on gunwales of boats.

Special Sea Detail

(1) Supervises the preparation of the anchor. Anchor is usually prepared and dropped to the water's edge as the ship comes into the harbor as a safety measure even though the ship is going to tie up at a dock.

Procedure:

- a. Disconnect anchor windlass from the lock.
- b. Place chain stoppers in position.
- c. Check the brake to be sure it is on.
- d. On word "let go" winch operator releases brake.
- e. Pulls pin and tips pelican hook on the chain.
- f. Order to let go includes number of fathoms desired. The red painted link indicates 15 fathoms; white 30 fathoms; blue 45 fathoms.
- g. Stand by to veer chain.

(2) Supervises 19 men in forward section for handling mooring lines. (There are three sections, 56 men, assigned to man all the lines which are numbered along the deck from bow to stern).

- a. Takes orders from Executive Officer usually stationed on the wing bridge and sees that these orders are executed, e.g. "take a strain on number two," "slack one," "double-up two and three," "place rat guards on all lines."

C. PERFORMANCE REQUIREMENTS

1. Responsibility

(1) As Division Boatswain he gives close supervision to the performance of the personnel of the First Division.

- a. Makes muster reports to division officers.
- b. Selects working parties and liberty parties.

c. Supervises the rotation of assignments on winches and steadying lines.
d. Gives close personal supervision to Special Sea Detail, section of 19 men.

(2) Has nonsupervisory responsibility for repair and replacement gear for hoists.
(3) Receives close supervision of the Ship's Boatswain in handling of Special Sea Detail and hoisting gear.
(4) Receives moderate supervision from the division officers and general supervision from the First Lieutenant in matters of upkeep of area and of troop holds (repair of bunk bottoms and cleaning).
(5) Receives close supervision of the Executive Officer when the latter supervises the Special Sea Detail from the bridge.

2. Special Job Knowledge and Skills

(1) Complete knowledge of hoisting gear.
  a. Placement of straps, sleds, salmon boards, nets, coaling bags, spreaders, pallets, etc.
  b. Doubling up and singling up of tackle on hoists.
  c. Repair and replacement of guys, toppings, spanners, whips.
  d. Operation of winches.
  e. Use of steadying lines.

(2) Knowledge of ground tackle.
  a. Handling of anchor winch.
  b. Operation of anchor winch.
  c. Stowage and cleaning of chain.

(3) Knowledge and ability to use mooring lines.
(4) Ability to supervise men and lead them.
  a. Sees jobs to be done in terms of number of men to perform the task.
  b. Distributes work on fair basis.
  c. Sees men's point of view but insists upon completion of the task and the conservation of materials and equipment.

3. Special Psychological Characteristics

Reasonableness, confidence and firmness.

4. Special Physical Characteristics

Generally able, about 25 to 30 years of age to insure sufficient maturity

D. HEALTH AND ACCIDENT HAZARDS

1. Danger exists from falling cargo or gear due to:

    (1) Failure to set brakes on topping or whip.
    (2) Parting of lines.
    (3) Overbalancing of loads due to swaying gear.
2. Position exposed to enemy action.

E. DESCRIPTION OF DUTY STATIONS

1. GQ station is forward of number one hatch in a semisheltered area near the overhang of the 5/38" gun tub.
2. 1A station is open to enemy action on foredeck in general.
3. Special Sea Detail station is forward of the guns on the bow.

F. EQUIPMENT, MATERIALS AND SUPPLIES

1. Equipment:
   Hoisting gear, chains, anchors, winches, boatswain seats, stages, straps, salmon boards, nets, ladders, pallets, coaling bags, general tools such as mauls and wrenches, pails, scrapers, paint brushes, serving tools, canvas tools.
2. Materials:
   Lines, cables, clamps, blocks, rags, grease, canvas, chain.
3. Supplies:
   Soap, sand paper, paint.

G. TECHNICAL TERMS AND NOMENCLATURE

1. Double up - run hoisting halyard from winch out to lead block near the end of the boom, down to block over hook, up through block at end of boom and down to make fast on block above hook. (Takes about 15 minutes to single up from a double purchase and reverse). (See also item 6).
2. Spanner - guy between upper ends of booms in yard and stay hookup.
3. Straps - cable slings used to attach loads to hoisting hook, sometimes covered with canvas, sometimes kept apart with spreaders when there is danger of cable crushing load.
4. Take a strain - snub the line gently so that line tautens.
5. Topped up - at sea booms remain in cradles or boom crotches, but when unloading or debarkation operations are imminent, booms are raised by setting whip brake, disengaging whip, engaging

topping clutch and releasing topping brake; then pull back on electric winch (O.C.S., General Electric) control lever and topping halyard is spooled in thereby raising end of boom out of cradle.

6. Double up moorings - via heaving line send bight to bollard on dock.[1]

This example of billet analysis clearly shows the great amount of detailed work involved, and the mass of information that is provided about the billet when the work is properly done.

Job Analysis in Industry

The analysis of jobs or billets is not new. It has been practiced in industry for a long time. Inasmuch as the term billet, in the sense of a job, is peculiar to the military services, industrial studies are referred to as job analysis, but the terms are practically synonymous. Frederick W. Taylor is credited with first introducing job analysis under the term "scientific management" soon after 1900.[2]

The term "job analysis" has two meanings depending upon the purpose for which the study is made. One of these is the preparation of a job specification for employment and pay purposes, and the other one has as its purpose the improvement and standardization of the method of doing the

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[1] U. S. Navy Department, Bureau of Naval Personnel, Billet Analysis Schedules for APA Enlisted Billets, Part I, (Navpers 16155), pp. 6-9. Washington: October 1944.

[2] William R. Spriegel, Principles of Business Organization, p. 333. New York: Prentice-Hall, Inc. 1946.

work.[3] Both of these meanings will be discussed briefly.

The first meaning applies to the more or less superficial study of the work done and the conditions under which it is done, in order to determine what the job actually is, the conditions under which it is done, the qualifications required of the worker to be able to do the work satisfactorily, and the relative amount of pay which the job deserves. The resulting information is summarized in a so-called "job specification," which is used in selecting from applicants for employment. The objective is to make it possible for the interviewer to more intelligently match an applicant's qualifications with the requirements of the job. The information is also used for the purpose of job classification, which will be discussed in a later chapter.

This first meaning also applies to the analysis when it is used for the purpose of job evaluation or rating to determine pay rates. In this procedure, jobs are usually evaluated in terms of characteristics that set off respective groups from each other. There is no uniformity in the number or kind of characteristics used. The number used may range from five or six to about a hundred in extreme cases. However, in modern practice relatively few characteristics are used, usually from five to ten. The following are examples of some of the more common ones:

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[3] Edwin N. Robinson, Business Organization and Practice, p. 159. New York: McGraw-Hill Book Co., 1945.

1. Physical requirements
2. Mental requirements
3. Learning time
4. Responsibility for men, material, and equipment
5. Working conditions including danger
6. Judgment

A range of point values is usually assigned to the various elements and each job is rated in accordance with this range depending upon the importance of the particular element to the job. These points are then totaled and compared with the totals for other jobs to determine their relative value for pay and other purposes. In practice there are many details and refinements to this basic system but the above outline serves to explain the principles involved.

Job evaluation, in this sense, is practiced by all large industries. It is a valuable tool of management that contributes to both the workers' satisfaction and managements' control in the following ways:

1. Facilitates the settlement of controversies about relative wage rates.
2. Shows the relative value of all jobs within the business.
3. Forms a basis for comparing jobs between different business houses or firms when the same system and standards are used.
4. Facilitates the establishment of the relative value

of a new job.

5. Serves as a basis for maintaining relative uniformity of wages in different plants or houses owned by the same firm, though the actual wage levels may vary markedly.

The second meaning of job analysis has as its purpose, the improvement and standardization of the method of doing the work. This involves not so much describing the work as it does dissecting it. The first step in this kind of analysis is to determine whether the work is really necessary. If it can be eliminated, no more time need be spent on it. One test of essentiality is to ask what would happen if this particular work were discontinued. Elimination of unnecessary work is the first technical step in any improvement program.

If the work is found to be necessary, the next step is to examine everything connected with the job, starting with the purpose of the work, the materials and equipment used, the conditions under which the work is done, and a minutely thorough scrutiny of the way it is done, often using time and motion analysis as a background. As a result of this detailed survey, several facts may be revealed: the light may be inadequate or may come from the wrong direction; the machine may be in poor condition or it may be obsolete; the material may not come in proper shape to work on; the tools may be dull, not appropriate, or even lacking; the

worker may make many unnecessary motions, which may not only take up unprofitably spent time but also tire him quickly; the work may not be arranged to best advantage; the work place may be too high or too low; the seat, if any, may be too high, too low, not comfortable, or ill-adapted to the worker and the work.

From a study of this analysis the job is improved wherever practicable, or an almost entirely new job may be synthesized, with appropriate materials, equipment, and tools, with as nearly ideal working conditions as possible under the circumstances. The improved job would use a method which contains no waste motions, no unnecessary effort, no strain, and which utilizes both hands simultaneously wherever advantageous and possible. Everything concerned with the job is then standardized so that wherever this same work is to be done the standards established can bet set up and adhered to.

Purpose and Use of Billet Analysis

Billet analysis in the Navy is done for practically the same basic reasons as job analysis in industry except that it is not used basically as a method of determining pay. It is possible, however, that it may be used for this purpose in the future. There are several reasons for billet analysis in the Navy and they will be taken up separately.

As in industry, the primary purpose of billet analysis

is to define all Navy jobs and to determine the minimum qualifications demanded of the personnel who fill them. This is the first step in any effective personnel management program. Before naval personnel can be procured from civilian life, the Navy must know the billets for which they are being procured and the minimum qualifications each candidate must possess for satisfactory performance in the job. Before the educational planning for each man is effected and training schools are set up, the Navy must know the objective of the training, and particularly the billet or types of billet which the graduates are to fill. Before naval personnel are distributed to the various operating commands, the bureau must know the number, types, and standards for each of the billets to which they will be detailed. The ultimate goal of personnel management is to insure that the right person is in the right place at the right time, and a complete knowledge of the jobs and the qualifications required to fill them is the first step in attaining this goal. This basic information about Navy jobs and billets is obtained from Billet Analysis Schedules,[4] which are the recordings of the various billets as analyzed. An example of one of these schedules is given on page 17.

Another purpose of billet analysis is to improve and

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[4] An example is: U.S. Navy Department, Bureau of Naval Personnel, Billet Analysis Schedule for APA Enlisted Billets, Part I, (Navpers 16155), Washington: Oct. 1944.

standardize the various billets. When billet analyses were first started it was found that there was a great deal of difference in the organization of the personnel on different ships and in the particular jobs and tasks that were assigned to any one billet. This was found to be true even for ships of the same type. Another purpose of the work then became to determine an efficient organization for each type of ship and to determine a desirable combination of jobs and tasks for each billet. This later developed into the problem of determining these factors for new types of vessels which were developed, such as the many types of landing craft. The results of this work are Specifications for Officer and Enlisted Billets[5] for each type of ship, which list all the billets and gives a description of each, together with statements of the usual rates assigned and the performance requirements. When practicable these are developed by combining the best features of studies on several ships of the same type. Normally typical bills listing battle, watch, and routine duties are also included. This results in more efficient billets and fewer of them so it is easier to train men for them and distribute them once they are trained.

Billet analysis is also used as a basis for determining the qualifications for the various ratings and rates.

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[5] An example is: U. S. Navy Department, Bureau of Naval Personnel, Specifications for LCS(L) Officer and Enlisted Billets, Washington: Sept. 1944.

It is necessary to constantly study these qualifications to insure that they accurately reflect changes in duties and skills brought about by current conditions and technological developments, and to increase the degree of specialization of enlisted training and thus reduce the overlapping between training for different ratings. In developing these qualifications a General Specification[6] is prepared for each rating by combining all of the major requirements from each of the billet analysis schedules of billets normally filled by the rating under consideration. In doing this, all available information is used including billet schedules from all types of ships and stations. The Manual of Qualifications for Advancement in Rating[7] is then prepared from these general specifications. As the name implies this manual lists in detail the minimum qualifications for promotion to each rate or pay grade in each of the different ratings.

Still another use made of billet analysis is in the naval job classification program, which is discussed in Chapter IV. Much of the basic information for this program is obtained through billet analysis. The result of this work

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[6] An example is: U. S. Navy Department, Bureau of Naval Personnel, General Specifications for Radiomen, (Navpers 16472), Washington: Dec. 1944.

[7] U. S. Navy Department, Bureau of Naval Personnel, Manual of Qualifications for Advancement in Rating, (Navpers 18068), Washington: 1947.

is the Manual of Enlisted Navy Job Classifications,[8] which describes some eight hundred different Navy jobs and assigns them each a code number. Billet analysis is also useful in the preparation of tables for the identifying of civilian jobs with equivalent Navy jobs.

For these reasons it can be seen that billet analysis is a very important and fundamental procedure in the naval personnel program, and that it must be used continuously in order to keep the information on Navy jobs and their qualifications up to date. It is necessary that all peacetime billets be analyzed but it is even more important that this work be done and kept up to date for all wartime billets, because it is most valuable and necessary for rapid mobilization and expansion.

Development of Billet Analysis

Prior to World War II, some analyses of jobs in the Navy had been made, but for the most part the work was haphazardly done and was uncoordinated. Whatever was done was usually done by some ship or station in an attempt to solve some local problem. With the rapid expansion of the Navy resulting from the necessities of World War II the need for such analysis became quite apparent. In the early part of the war, analyses continued to be made locally by ships and

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[8] U. S. Navy Department, Bureau of Naval Personnel, Manual of Enlisted Navy Job Classifications, (Navpers 15105), Washington: Oct. 1945.

stations and also by research groups employed by contract to conduct studies on specific problems, such as the selection of gun crews or the selection of telephone talkers. Finally in the autumn of 1943, a centralized program of billet analysis was established in the Bureau of Naval Personnel. Two staffs were organized, one to study the billets of enlisted men, and the other to study officer billets. Only the former will be discussed in this paper. Experts were obtained from industry and from educational institutions and they organized and started a sound and efficient system of billet analysis for the Navy, and directed and coordinated all such work. Their mission was to completely analyze all of the various types of officer and enlisted military billets in both the peacetime and the wartime Navy. As has been explained above, their work finally involved much more than this, but it was a start on the tremendous and urgent task.

Obviously all of the work could not be accomplished at once, so work was started on the most urgent problems first, such as analyzing the most critical billets or jobs, to describe the nature of these jobs, and determine the qualifications required of the individuals who could fill them. As outlined above this was necessary so men could be recruited and trained for the jobs and ratings. Another early and urgent problem was the study of the billets and organizations of the new types of ships, such as landing craft and APA's, which were being developed rapidly during

the war. This was necessary to establish uniform and efficient organizations for these important types of vessels.

Present Status

Although a considerable amount of information was collected on a number of jobs and ratings, and many ship-type specifications have been published, actually the Navy is just starting on a systematic billet analysis program. Many types of ships and activities have not been studied at all. For many naval occupations there is almost no information available and even for those ratings which have been given the most attention the information on hand is limited. A beginning has been accomplished, however. Some data are available and, what is more important, techniques and methods have been developed and have been tested under actual operating conditions. Moreover there has been established a Billet and Qualifications Research Division under the Research Activity in the Bureau of Naval Personnel whose goal is to eventually have a complete analysis of every naval officer and enlisted billet in both the wartime and the peacetime Navy. This division is now functioning in a post-war status with a small but well trained staff of billet and qualification analysts. The setting up of this organization insures that the work began during the war will be continued.

Future Need

It can be readily seen that the nature of billet

analysis is such that it is impossible to bring it to a definite conclusion or complete it. Once completed an analysis must be maintained up to date by revisions from time to time to meet changing needs and conditions. As new equipment is developed and as new types of naval warfare are adopted, jobs will change and as such changes occur, complements, training, and all other personnel programs must be modified accordingly. It is important to realize, therefore, that in a dynamic Navy some sort of job analysis will continuously be necessary.

It is particularly important that billet analysis be conducted aggressively during peacetime, because it is in mobilization for rapid expansion in time of war that the most valuable results of the work are derived. These benefits will not be available if the work is delayed until an emergency arises. It is also true that, even if time permitted it, analysis is much more difficult to accomplish in wartime because the ships and the men are devoted to urgent military necessities and are not as available for such work. During peacetime, however, it is much easier to give adequate time to research and to find ships and activities available for any desired studies. If the possibilities for peacetime research are properly realized, the Navy can be prepared to expand its personnel force to meet whatever emergency may be expected of it. This cannot be over-emphasized for the success of future mobilization may be directly dependent on the

adequacy of our peacetime billet studies.

Operation of Billet Analysis

While the Billet and Qualifications Research Division of the Research Activity in the Bureau of Naval Personnel will be responsible for conducting a coordinated program of billet analysis, it cannot be expected to do all the work itself. For one thing, its staff is likely to be quite small. The success of whatever program may be adopted will, in all probability, require the cooperation of ships and stations.

It is probable, also, that ships and stations will continue to have local problems that they will have to solve on the basis of analyses which they conduct themselves. For such analyses, advice and technical assistance will be freely given by the Bureau of Naval Personnel. In return, the results of such research should be submitted to the Bureau where they can be added to its store of data on job analysis.

Ships and stations will have a still further responsibility. Namely the validation of conclusions and recommendations made by the Bureau. Even with the precautions taken to assure the collection of objective data and the accurate interpretations of such data, it is possible that errors or omissions may occur. If so, it will be the responsibility of the ships and stations to call such faults to the attention of the Bureau along with appropriate recommendations,

which will be based most likely upon results of their own analysis.

The average line officer will seldom be called upon to make a billet analysis, but the completed analysis will be an invaluable source of information for him. From it, he can determine the nature of the job to be done, and the qualifications necessary for a man to carry on the job effectively. Further, in the shipboard type of analysis, a complete Watch, Quarter, and Station Bill accompanies the analysis and this can be of great help to the officer either in preparing his own bill or in interpreting the bill prepared by his senior officers. Effective personnel control requires that all officers have a general knowledge of billet analysis and the reasons for it, as well as the uses that can be made of it. This is necessary so they can intelligently utilize the technique to the fullest advantage, and thus improve their handling and supervising of the men who are assigned to them.

Summary

Because the Navy is such a large organization, it is necessary that the personnel functions, such as procurement, training, and placement, be done in an efficient and scientific manner. This requires a detailed knowledge of all the jobs that have to be performed and the qualifications of the men required to fill the jobs. This information is obtained

by a process known as billet analysis which is a systematic procedure of studying and recording every detail of work performed in a particular billet or job and recording the qualifications required by the men who fill the job. The process is long and tedious and must follow the procedure implicitly. It is usually performed by experts who have been trained for the work, but can also be accomplished by the average officer if he follows the standard instructions carefully.

Industry has been practicing job analysis in one form or another since about 1900 and has been developing it ever since. The problems in industry are practically the same as those in the Navy. However, the Navy is larger than most industries and, therefore, requires this technique just that much more. One of the principle uses made of job analysis by industry is to evaluate the value of the jobs in terms of wages. This feature has not yet been directly applied in the Navy but it is entirely possible that it may be in the future.

The primary purpose of billet analysis is to define all Navy jobs and determine the minimum qualifications demanded of the men who fill them. This information is absolutely essential before men can be properly procured, trained, and distributed to fill the various jobs or billets. Another purpose is to improve and standardize the billets and to establish them for new types of vessels. Analysis is also

useful in determining the qualifications for the various rates and ratings, and it is helpful in the Navy job classification program.

A little billet analysis was practiced in the Navy before the last war, but this was usually in isolated cases where a ship or station was trying to solve some local problem. At the beginning of the war it was realized that billet analysis was essential and a definite program was started by the Bureau of Naval Personnel late in 1943. The most urgent work was done but a great deal was left to be completed. In fact, the work will never be completed because billet analysis is a continuous process. Once a billet is analyzed it has to be maintained and corrected from time to time for changes that are required because of technological developments or changes in the methods of conducting naval warfare.

The work in billet analysis is most fruitful when the Navy is mobilizing reserves and civilians to rapidly expand itself in times of emergency or war. In fact, without a thorough knowledge of the nature of, and the requirements for, the many wartime billets it is questionable if the Navy could expand as fast as will be necessary to successfully wage any war that may develop in the future. It is, therefore, absolutely essential that full advantage be taken of the possibilities for peacetime research to provide all of the information on wartime and peacetime billets, so that the Navy will be prepared in the event that mobilization is

ever necessary.

Ships and stations will be required to cooperate in the studies and to test and verify their results. It is important that all officers have a general knowledge of the process of billet analysis and the reasons for it so they may use it intelligently and also aid in this work which is so essential to the Navy.

CHAPTER III

THE RATING STRUCTURE OF THE NAVY

Introduction

The men who do the work of the Navy differ in many respects. Some of them can perform one kind of a job or trade such as cooking, and others do different kinds of work. Some are relatively young and inexperienced while others are older and experienced in many situations and in leading and handling men. It is obvious that some kind of system is necessary to identify these various traits of the different men, so that they can be readily organized into a working team with each man being given the job and responsibility he can handle the best. This identifying is done in the Navy by a system of ratings, rates, and pay grades which constitutes the rating structure of the Navy.

This chapter will discuss the rating structure of the Navy. Some of the more common terms will be defined first, then the rating structure will be explained and a few sample ratings will be described. This will be followed by a discussion of rates, pay grades, and special qualifications. The functions and use of the system, and its relationship to complements and allowances will then be discussed.

Definitions

In order to simplify this discussion and to aid in understanding it, the following terms are defined. Some of these were presented in the last chapter but are listed again for convenience and review.

Task.--A task is a single operation involved in the performance of work. Usually the work of any man consists of several tasks.

Job.--A job is a recurring task or a group of functionally related tasks performed by a worker frequently enough to constitute his full-time employment.

Occupation.--An occupation is a recurring job or a group of functionally related jobs which, for classification purposes, it is expedient to designate by a name or title.

Rating.--A rating in the Navy's classification system is the name given to an occupation which requires essentially the same kind of aptitude, training, experience, knowledge, and skills.

Rate.--A rate is a pay grade classification within a specific rating, reflecting levels of aptitude, training, experience, knowledge, skill, and responsibility. Thus, the rating of yeomen is reducable to the rates of chief yeoman; yeoman, first class; yeoman, second class; and yeoman, third

class.

Pay grade.--A pay grade is a classification applying to all enlisted personnel in the Navy for the purpose of determining their pay. All the men within a given pay grade receive the same basic compensation. There are eight pay grades in the Navy, ranging from one and one A on through seven. Pay grade one is that of a permanently appointed chief petty officer and pay grade seven is that of a seaman recruit.

The Rating Structure

Any large activity involves a number of men working together to achieve certain goals. Each man is in a billet and has a certain number of tasks to perform. The men are classified according to their assignments or the work they do. A given assignment may require a man with certain skills or knowledges or from a given occupation. Thus the activity may need clerks, bookkeepers, storekeepers, machinists, or carpenters. The various types of occupations needed group together to form what is called an occupational structure.

In the Navy the various ratings needed to do the work form, as a group, the rating structure of the Navy. A study of the Navy rating structure involves a study of the skills and knowledges grouped in each rate, the various grades necessary for each rating, and other factors.

In a large assembly plant where because of the volume

of production a high degree of specialization is possible, the organization approaches that of a task structure rather than an occupational one. Each worker does one simple task. As the volume of work decreases or as the number of operations increases with a given amount of manpower, each individual must perform a larger number and greater variety of tasks and the structure becomes more occupational in nature. This partially explains the reason for the recently developed differences in the peacetime and wartime rating structure of the Navy, which will be discussed later.

The rating structure of the Navy is presented in detail in part D, Chapter 5, of the Bureau of Naval Personnel Manual.[1] As it is subject to frequent revision to keep in step with the changing needs of the Navy, this discussion of the matter will be general, rather than specific. In fact, a comprehensive change in the rating structure is being planned as this is being written to improve the entire system so it will better meet the needs of the Navy as demonstrated by the last war. The following description will therefore apply to the new structure which is tentatively scheduled to go into effect on 1 January, 1948.

The new structure consists of eleven groups of ratings grouped according to broad general functions involved

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[1] U. S. Navy Department, Bureau of Naval Personnel, _Bureau of Naval Personnel Manual_, Revised, Washington: Government Printing Office, 1945.

or according to shipboard organization. The names of the groups, such as deck, ordnance, and construction, roughly indicate the basis for classification. Each group includes a number of functionally related or associated ratings. Table 2 on page 46 lists the eleven groups of ratings and also shows the number of ratings in each of three categories, which will now be explained.

The new rating structure has been made flexible so that it can accommodate the needs of the Navy both in peacetime and in war. During peacetime the General Service Rating will produce broadly qualified, well rounded, versatile personnel who in time of emergency can be advanced to higher positions of responsibility and authority. During wartime the same rating groups will be divided into a larger number of narrower Emergency Service Ratings, and some additional Exclusive Emergency Service Ratings will be established also. This emergency expansion in the number of ratings makes it much easier to find and train men for any particular rating. Following a national emergency and a return to peacetime organization, men in the narrow emergency service ratings will be required to qualify for the broader general service ratings in order to be retained on active duty. This will be facilitated since the general service ratings are directly related, occupationally, to the emergency service ratings. The relationship between these three categories of ratings is illustrated in Table 3, on pages 47 and 48, which lists all of

Table 2

SUMMARY OF NAVY ENLISTED RATING STRUCTURE BY GROUPS

Group	Number of General Service Ratings	Number of Emergency Service Ratings	Number of Exclusive Emergency Service Ratings
I Deck....................	4	10	0
II Ordnance................	4	10	1
III Electronics.............	1	1	0
IV Precision Equipment.....	2	4	0
V Administrative and Clerical..............	11	26	8
VI Miscellaneous...........	4	10	1
VII Engineering & Hull......	12	25	1
VIII Construction............	7	12	0
IX Aviation................	14	29	2
X Medical.................	1	1	0
XI Steward.................	1	2	0
Various Non-Petty-Officer Rates included in above groups.....................	12	12	0
Totals.........	73	142	13

Table 3

RATINGS IN GROUP VIII (CONSTRUCTION)
OF NAVY ENLISTED RATING STRUCTURE

Pay Grades (1)	General Service Ratings (2)	Duties (3)	Emergency Service Ratings (abbreviations & duties) (4)	Exclusive Emergency Service Ratings (5)
4-1	Surveyor (SV)	Make reconnaissance, preliminary, and final location surveys for roads, airfields, pipe lines, ditches, buildings, etc.	Same as General Service.	None
4-1	Construction Electrician's Mate (CE)	Install, maintain, and repair all types of electrical equipment and communication systems.	(CEG) General Construction Elec. (CEP) Power Lineman (CEL) Communication Lineman	None
4-1	Driver (CD)	Operate and maintain automotive and heavy construction equipment such as trucks, tractors, tournapulls, bulldozers, and shovels.	Same as General Service.	None
4-1	Mechanic (CM)	Maintain, repair, and overhaul automotive and heavy construction equipment, such as trucks tractors, tournapulls, bulldozers, and shovels.	(CMG) Gasoline Engine Mechanic (CMD) Diesel Engine Mechanic	None

(Continued on next page)

Table 3--Continued

(1)	(2)	(3)	(4)	(5)
4-1	Builder (BU)	Construct, maintain, and repair wood and concrete structures.	(BUL) Light Construction (BUH) Heavy Construction	None
4-1	Steelworker (SW)	Erect or dismantle steel bridges, buildings, and other assemblies used in heavy construction.	(SWS) Structural Steel worker (SWR) Construction Rigger	None
4-1	Utilities Man (UT)	Install, operate, maintain, and repair heating, water, power generating, and sewage disposal equipment.	Same as General Service	None
4-1	None	Excavation Foreman Navy Job Code 45110	None	(ESX) Specialist
5	Fireman (FN)	Under supervision; light off boilers; operate pumps, turbines, motors; record readings of gages; maintain and clean machinery and compartments.	Same as General Service. Normal Advancement to ratings in Construction & Engineering & Hull groups.	None
6	Fireman Apprentice (FA)	Under supervision, assist Fireman and Petty Officers in the performance of their duties.	Same as General Service. Normal advancement to Fireman (FN).	None

the ratings in the construction group. The relationship of the construction group to the entire rating structure is shown in Table 2 on page 46. These two tables give a general picture of the rating structure.

Ratings

As defined above an occupation is a class name given to a group of jobs requiring common skills and knowledges. Thus the occupation of carpentering is the name given to the group of jobs requiring skill in woodworking and a knowledge of wood construction, cabinet making, and the like. This does not mean that all carpenters do the same job. It does indicate, however, that they have a general knowledge of all the tasks or jobs and can perform some of them with a good deal of skill.

The Navy uses the term rating synonymously with occupation. In some instances the skills and knowledges required to work in a Navy rating are similar to those of a parallel civilian occupation. This is true of such technical occupations as sheet metal worker or machinist as well as the maritime trades.

The three new categories of ratings will now be defined in more detail.

General Service Rating.--A general service rating is a peacetime or basic rating which encompasses a broad and comprehensive occupational area. In peacetime, this is the

rating held by a man on active duty in the regular Navy. During a period of national emergency and at a time to be determined, men in a general service rating will be changed to an appropriate emergency service rating. As an example a general service rate of construction electrician's mate, first class, may be changed to construction electrician's mate L, first class, whose qualifications are much narrower and more specialized.

Emergency Service Rating.--An emergency service rating is a rating in pay grades one to four inclusive, covering an occupational area narrower than that of the general service rating and constituting a subdivision into which men of the general service rating will be channeled in time of national emergency. An emergency service rating permits more specialization than the general service rating and is designed to make use of civilian skills and occupations with a minimum of training. Enlistments directly into these ratings will be made in time of national emergency. Following demobilization, men holding these ratings who wish to remain in active duty in the regular Navy will be required to qualify in the related general service rating embracing the emergency service rating they held during the period of emergency. The qualifications for these ratings are published for use when the emergency service ratings are placed into effect and for the training of reservists holding these ratings, both during

peacetime or during a period of national emergency.

Exclusive Emergency Service Rating.--An exclusive emergèncy service rating is a rating in pay grades one to four inclusive to be placed into use upon expansion to a wartime basis in order to make most effective use of civilian skills with an absolute minimum of training. In peacetime, the rating will not exist in the regular Navy, the necessary functions of this rating being performed by personnel in the general service ratings as collateral duty. The qualifications for these ratings are published for use when the exclusive emergency service ratings are placed into effect and for the training of reservists holding these ratings, both during peacetime or during a period of national emergency. Examples of this rating are fire fighter and artist.

A review of Table 3 on pages 47 and 48 may aid in understanding these definitions, and the relationship between the three kinds of ratings.

Descriptions and qualifications for the various ratings are given in detail in the *Manual of Qualifications for Advancement in Rating*.[2] For convenience a few of the typical ratings will be described to further illustrate the above discussion.

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[2] U. S. Navy Department, Bureau of Naval Personnel, *Manual of Qualifications for Advancement in Rating*, (Navpers 18068), Washington: 1947.

BOATSWAIN'S MATES (Group I, Deck)

GENERAL SERVICE RATING

Boatswain's mates perform many types of deck duties aboard ship, including the maintenance of running rigging, standing rigging, ground tackle, davits, boat falls, canvas articles, fenders, mooring lines, and nets. Supervise operation and maintenance of ship's boats. Operate and maintain construction battalion equipment used in loading, unloading, dredging, and underwater construction. Supervise working parties and damage control parties. Act as members of gun crews.

EMERGENCY SERVICE RATINGS

Boatswain's Mate G.--Perform deck duties aboard ships. Supervise damage control and working parties. Act as members of gun crews.

Boatswain's Mate B.--Operate and maintain all equipment used by construction battalions in connection with dredging, underwater construction, and hoisting and lowering of equipment.

Boatswain's Mate S.--Operate derricks, cranes, winches, tractors, lift trucks, and other equipment used in loading, unloading, and stowing cargo by construction battalion activities.

Boatswain's Mate K.--Fabricate and patch shipboard

canvas at ship repair activities.

Boatswain's Mate R.--Rig cranes, booms, blocks, and tackle at ship repair activities. Splice manila and wire rope.

INSTRUMENTMEN (Group IV, Precision Equipment)

GENERAL SERVICE RATING

Instrumentmen install, test, calibrate, overhaul, and repair mechanical instruments, such as meters, gages, office machines, watches, and clocks. (This does not include chronometers, electronic devices, interior communications equipment, or aircraft and optical instruments.) Work from blueprints and schematic drawings; recondition instruments, and select and set jewels in instruments, watches, and clocks. Keep records of work done in repair shop; prepare requisitions for spare parts and supplies. Repair mechanical parts of electrical instruments.

EMERGENCY SERVICE RATINGS

Instrumentmen W.--Repair, clean, and adjust watches and clocks (except chronometers) used in the Navy. Are assigned to repair ships and shore stations.

Instrumentmen O.--Maintain and repair typewriters and other office equipment at large shore installations or aboard tenders.

Instrumentmen I.--Install, test, calibrate, overhaul,

and repair mechanical instruments, such as meters, gages, and hairspring instruments. Repair mechanical parts of electrical instruments. Are assigned to repair ships and shore stations.

YEOMEN (Group V, Administrative & Clerical)

GENERAL SERVICE RATING

Yeomen perform clerical and secretarial duties of all kinds on ships and stations, including typing, filing, operation of duplicating equipment, and general office work; handle correspondence, prepare reports, and maintain necessary records and official publications. Act as recorders for deck courts and as reporters for courts-martial. Personnel in higher pay grades qualify as stenographers.

EMERGENCY SERVICE RATINGS

Yeomen T.--Perform clerical duties of all kinds on ships and stations, including typing, filing, operation of duplicating equipment, and general office work; handle correspondence, prepare reports, and maintain necessary records and official publications. Act as recorders for deck courts.

Yeomen S.--Take dictation of correspondence, reports, courts-martial material, using a typewriter. When not employed as stenographers may perform general office work.

MACHINIST'S MATES (Group VII, Engineering & Hull)

GENERAL SERVICE RATING

Machinist's mates operate and perform upkeep on main steam engines (either reciprocating or turbine types) and auxiliary engine-room and boiler-room equipment, such as pumps, compressors, valves, oil purifiers, heat exchangers, governors, and reduction gears. Maintain and make minor repairs to outside machinery, such as the steering engine, anchor windlass, cranes, elevators, and winches. Operate, maintain, and repair refrigeration and air-conditioning equipment. Perform duties on generation, stowage, and transfer of the following industrial gasses; oxygen, acetylene, carbon dioxide, nitrogen, hydrogen, and helium.

EMERGENCY SERVICE RATINGS

Machinist's Mates L.--Operate, maintain, and make operating repairs to main propulsion and auxiliary machinery of steam propelled vessels.

Machinist's Mates R.--Operate, maintain, and repair refrigeration and air-conditioning equipment.

Machinist's Mate G.--Operate and maintain machinery for generating and compressing industrial gas and for charging compressed-gas containers.

BUILDERS (Group VIII, Construction)

GENERAL SERVICE RATING

Builders construct, erect, maintain, and repair frame, timber, and concrete structures, such as warehouses, hospitals, barracks, bridges, trestles, tanks, buildings, wharves, and cofferdams. Perform such auxiliary operations as shoring, underpinning, pile jettying, capping, driving, and cribbing. Operate sawmills and cabinet and carpenter shops. Build concrete forms, place reinforcing steel, and batch mix, and place concrete in all types of structures, including underwater installations. Direct logging operations.

EMERGENCY SERVICE RATINGS

Builders L.--Work on light construction, such as buildings, warehouses, and hospitals.

Builders H.--Work on heavy construction, such as wharves, docks, cofferdams, and trestles.

No examples of exclusive emergency service ratings have been given because the detailed descriptions for these ratings are now being developed and are not yet available. The requirements for these ratings will be very much like their civilian counterparts.

A review of the sample ratings listed above reveals that the jobs grouped into a rating have common and related

characteristics. In determining whether certain jobs have sufficiently common characteristics to be grouped into a rating it is necessary to consider several factors, the more important of which are:

1. Kind of training and experience required to perform the job. This factor will indicate the skills and knowledge required.
2. Kind of aptitudes required to perform the job. Included are both physical characteristics and mental aptitudes.
3. Kind of equipment operated, tools used, materials worked, or articles produced.
4. Surroundings in which performance of job occurs, including the administrative organization within which the job is located.

Ordinarily, the first two factors--those concerning training, experience, and aptitudes--determine whether jobs are alike or unlike; therefore, they can be considered the most important factors. However, there are occasional jobs which may possess common factors but which are so different in working environment, tools and equipment used, or materials worked with, that they are better placed within different ratings.

Rates and Pay Grades

The men operating within the various ratings in the

Navy are compensated according to their ability and training. Rates of pay are regulated by Congress and for the armed forces are grouped into what are called pay grades. All men within a given pay grade receive the same compensation. The highest pay grade for an enlisted man is pay grade one. That is the pay grade of a permanently appointed chief petty officer. The lowest pay grade is that of a seaman recruit, which is pay grade seven.

Enlisted personnel in pay grades one, two, three, and four are known as petty officers. Petty officers in pay grade one are chief petty officers and those in pay grades two, three, and four are petty officers first class, second class, and third class respectively. The designations, chief, first class, second class, and third class, are known as rates. Thus there is a direct relationship between a petty officer's rate and his pay grade. Care should be taken not to confuse rate and rating. Rate is the class of the petty officer, first, second, third, or chief, whereas rating is the name of his occupation, such as machinist's mate, signalman, or boatswain. Thus the rating of yeoman includes all men of that occupation having the rates third class, second class, first class, and chief. The relationship of the pay grades to the rates and one category of non-rated men is shown in Table 4 on the following page.

Table 4

PAY GRADES OF NAVY ENLISTED MEN

Pay Grade	Rate or Classification
1	Chief Petty Officer (permanent appointment)
1A	Chief Petty Officer (acting appointment)
2	Petty Officer First Class
3	Petty Officer Second Class
4	Petty Officer Third Class
5	Seaman
6	Seaman Apprentice
7	Seaman Recruit

Special Qualifications

One of the purposes of the rating structure is to provide opportunities whereby men may earn promotion and increased pay as a result of learning more about and becoming more skilled in doing technical work within their respective ratings. There are, however, many jobs in the Navy which, for one reason or another, cannot be assigned to any one rating, but must be performed by men of various ratings as collateral duties in addition to the normal duties of their ratings. Such additional jobs involve a high degree of knowledge and skill, consequently a man is required to devote much time and effort before he is able to perform them efficiently. Because of the extra time and effort required and because it is necessary that the Navy have available men with these extra skills, an incentive has been established to encourage men to qualify for such jobs. This incentive is a system of so-called special qualifications, which

provide special insignia and, in most instances, extra compensation for men who are qualified.

The requirements for the various special qualifications are set forth in part D, Chapter 5, of the _Bureau of Naval Personnel Manual_.[3] In general they include: stations for which extra compensation is allowed, skill requirements, knowledge requirements, special physical requirements, length of time for which qualification is effective, opportunities for requalifying periodically, and number of men allowed extra compensation. Some of the special jobs, which involve the use of arms and for which men may currently receive extra compensation are: aviation gunner, gun crewman, gun rangefinder operator, gun director crewman, expert rifleman, and expert pistol shot. In addition there are other special qualifications, including those for men qualified for duty aboard submarines, or for duty as divers, aviation pilots, welders, motion picture operators, or training instructors.

Certain of these special qualifications, such as aviation pilots and divers involve a very substantial increase in compensation. However, the requirements for receiving this extra pay are that a certain amount of the special work actually be performed within specified periods

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[3] U. S. Navy Department, Bureau of Naval Personnel, _Bureau of Naval Personnel Manual_, Revised, Washington: Government Printing Office, 1945.

and that the special qualifications be assigned to the allowance of the command to which the man is attached.

Functions of the Naval Rating Structure

The rating structure of the U. S. Navy has been outlined above and reasons for its existence have been discussed. Some of the direct ways in which the rating structure is used will now be taken up.

It is emphasized that, since a rating is a rather general occupational group, the only direct uses which can be made of ratings must necessarily be general also, nevertheless, several of these general uses are very important, the chief ones among them are as follows:

Recruiting.--By providing occupational areas within which men have an opportunity to learn occupations and to advance in skill, knowledge, responsibility, and pay, ratings represent tangible naval careers. As such, they offer positive inducements and motivation to potential naval recruits.

Training.--Ratings provide convenient classifications around which to plan and organize training programs on the level of basic or elementary training for an occupation. Included in this type of training are the Navy's class "P" and class "A" schools.

Promotion.--Ratings provide a basis for advancement in pay grade so that such advancement is based upon a man's

increased usefulness to the Navy within his own occupational area.

Administration.--Ratings provide classifications and symbols for the maintenance of personnel records and the designation of men whenever occupational groups are adequate. Job classification, which will be discussed in the next chapter, assists in breaking this down to a finer degree.

Morale.--Through the use of insignia and continual reference to their ratings, a psychological stimulus is given to enlisted men. Such recognition of the distinction of naval occupations, by enhancing the concept of a naval career, contributes to the morale and efficiency which are so essential to the Navy.

In addition to these direct uses of naval ratings, there are indirect uses that are also important. This is especially true of those uses discussed in the next chapter in which ratings are supplemented by job classification.

Complements and Allowances

This discussion of ratings and the rating structure of the Navy would not be complete without an explanation of complements and allowances. A ship's complement is its manpower budget expressed in terms of the number of men in each rate and rating that are deemed necessary to operate the ship.

Complements vary from ship to ship or among ship types and classes in accordance with several factors, including: (1) stations to be manned during battle and watch, (2) equipment to be operated, and (3) limitations as to living space and weight as established by the Bureau of Ships. When these factors are translated into terms of ratings, pay grades, and eventually job classifications, the resulting complement becomes the basis of personnel actions for the ship. The ship will organize its men into divisions and watch sections in accordance with the complement and men will be detailed to the ship and transferred from it in accordance with the complement as modified by the current allowance for the ship.

Allowances represent the number of men in each rate and rating to be actually assigned to a ship. Whereas complements are relative tables, changing only as there are physical modifications in the ships, allowances may vary from time to time in accordance with the size of the naval force. In wartime, complements may even be exceeded slightly for such purposes as training men to be subsequently transferred to newly constructed ships. During peacetime, however, when battles are not imminent and when the naval force is reduced, allowances may be considerably below complements.

Summary

The rating structure of the Navy consists of ratings, rates, and pay grades which roughly identify the abilities

and traits of the various men required to operate the complex Navy. This is necessary so the men can be readily organized into a smooth working team with each man being given the job that he can handle the best.

The Navy is constantly revising and improving the rating structure to meet the continuously changing needs of the service. Right now a major revision is being planned which will incorporate the many benefits which World War II demonstrated to be desirable. The details of this revision have already been announced in preparation for making it effective on 1 January 1948.

The new rating structure groups the ratings into eleven groups which were determined by the broad functions involved or the shipboard organization. It has also been made much more flexible so it can accommodate the needs of the Navy both in peacetime and in war. During peacetime there will be fewer broad ratings, each of which will cover many tasks and jobs. In wartime the number of ratings will be more specialized and agree more closely with similar civilian jobs that may exist. This will facilitate the utilization of civilian experience and the training of men for a given rate. It also fits the wartime organization of the Navy much better as there are many more men to perform approximately the same number of tasks.

The new categories of ratings are: the General Service Rating which is a broad peacetime rating held be all men

on active duty in the regular Navy in peacetime; the Emergency Service Rating which is much more specialized and is made by dividing the general service rating into several special service ratings; the Exclusive Emergency Service Rating, which is a wartime rating designed to make the most effective use of civilian skills with a minimum of training.

Each rating is divided up into rates for the purpose of identifying various degrees of ability and training, and for the purpose of paying the men. There are seven pay grades in the enlisted branch of the Navy and each one corresponds to an equivalent rate or classification. In addition to ratings the Navy has a system of special qualifications for the purpose of identifying men who are qualified to perform some special task or job which because of its general or special nature does not fit well into any particular rating. The special qualifications are indicated by appropriate insignia and most of them give the men who hold them extra compensation. In some cases, such as divers and aviation pilots, this extra compensation is very substantial.

The rating structure is very important in the proper administration of personnel in the Navy and is used in nearly all phases of this work including: recruiting, training, distribution, promotion, and building morale. It is important that every officer and prospective officer have a thorough knowledge of the rating structure and its uses.

CHAPTER IV

JOB CLASSIFICATION

Introduction

The last chapter discussed the rating structure of the Navy and explained how ratings and rates are used to roughly classify men according to their abilities and training. In the old Navy this procedure was adequate, but all the technological developments that have been made recently have made the work of the Navy so complex that a great deal of specialization is necessary in order to perform it efficiently. This specialization naturally requires a great many more different jobs than was necessary under the old Navy. In order to make the traditional rating structure sufficiently selective for the efficient training and detailing of men on the higher and more specialized levels, it has been supplemented by a system of Navy job classification to identify individual jobs. This has become an important part of naval personnel work and a naval job classification code number is now a part of every man's service record.

This chapter will introduce and describe the Navy job classification codes and will also outline the job classifying system used by industry and explain how the Navy makes

use of it. The application of the system will be explained and the chapter will be concluded with a discussion of the present developments and problems still to be accomplished in job classification in the Navy.

Navy Job Classification System

The Navy job classification system assigns a standard title and a five-digit numerical code to each of the hundreds of specialized jobs performed by enlisted personnel on all the ships and stations throughout the Navy. This system is intended to contribute to the more refined detailing of personnel in terms of individual skills and the requirements of jobs to be filled. For this purpose the traditional rating structure, which was described in the last chapter, has proven to be inadequate. The complexity of machinery and operations of the modern Navy has made necessary the development of this more comprehensive and flexible job classification system, under which every enlisted man is assigned a title and code indicative of the Navy job which he is best qualified to perform. The Manual of Enlisted Navy Job Classifications[1] is the working manual which describes some eight hundred different Navy jobs and assigns them each a code number. This manual also gives other details of the system and explains how to use it.

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[1] U. S. Navy Department, Bureau of Naval Personnel, Manual of Enlisted Navy Job Classifications, (Navpers 15105), Washington: October 1945.

Basic Elements of the System

Navy Job Definitions.--Accompanying each job listed in the job classification system is a brief definition of the job. This definition is not a complete analysis of all the tasks involved, but it is intended to indicate those significant aspects of each job which make it different from all others.

Navy Job Title.--Each classified job has been assigned a specific job title. Official abbreviations have been made for some of the titles when practicable. In all records and communications where job titles are used, the standard official abbreviation may be used. It is important that they be used exactly as given in the manual and that no other abbreviations be made or used.

Navy Job Code.--Each job is assigned a five-digit number. This is the Navy job code. Whenever the Navy job title is used, the Navy job code is also used. However, in some reports and tabulated records, the Navy job code may be used without the title. Since some of the job titles have several different code numbers to show specialization in certain combinations of equipment, it is important to always record the correct code number and to record it accurately.

Service Type Code.--The service type code is a

system of two-digit numbers which identify the major types of Navy ships and shore activities. The function of this code is to identify the type of activity in which each man acquired the Navy skills indicated by the job title and code assigned to him. Some examples of service type codes are given in Table 5 on this page.

Table 5

EXAMPLES OF SERVICE TYPE CODES

Code Number	Activity Represented by Code
01	Carrier Type Aircraft (Casu, CasuF, CasD)
15	Armed Guard
20	Aircraft Carrier (CV and CVB)
22	Battleship (BB) and Large Cruiser (CB)
29	Submarine (SS) Minelaying Submarine (SM)
40	Hospital Ship (AH)
50	Ammunition Ship (AE)
62	Navy Yards
71	Naval Prisons
77	Field Construction Units and Activities
82	Depots, Storehouses, Stores and Supplies
99	Miscellaneous

Major Job Groups.--All Navy jobs are organized into nine basic major job groups with further breakdowns within each group. These major job groups with their code numbers are listed in Table 6 on the following page.

Examples of Classified Jobs

The Manual of Enlisted Navy Job Classifications[2] lists some eight hundred different jobs which have been

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[2] Ibid.

Table 6

MAJOR NAVY JOB GROUPS AND CODE NUMBERS

Job Codes	Major Job Groups
00000-09999	Seamanship
10000-19999	Ordnance
20000-29999	Electronics
30000-39999	Engineering and Repair
40000-49999	Metal Working, Construction, & Utilities
50000-59999	Aviation
70000-79999	Administrative and Clerical
80000-89999	Technical and Miscellaneous
90000-99999	Medical

classified. A few of them will be given here as samples of typical jobs. It will be noted that each job has a job code or number, a job title, a definition of the job, and sometimes an abbreviated title whenever abbreviation is permissible.

03112 QUARTERMASTER SUPERVISOR (QM Supv)

Performs all duties of quartermaster watch stander and, in addition, is qualified to supervise other quartermasters as quartermaster of the watch on a large ship.

03121 QUARTERMASTER WATCH STANDER (QM Watch Stander)

Under supervision, performs all ordinary duties of quartermaster operating with the fleet; acts as helmsman, stands after steering watch, makes log entries, takes and plots bearings, interprets bouys, channel markers, and visual signals, and takes soundings; winds

and sets chronometers. May correct charts and publications. Is familiar with the purpose and use of all navigation instruments. May instruct strikers and act as quartermaster of the watch.

03910 QUARTERMASTER, BASIC (QM, Basic)

This classification is for rated or non-rated men, including strikers, who perform routine or basic quartermaster duties and who are not fully qualified for a specialized classification. Graduates of class "A" QM school who have had no significant experience should be assigned this classification.

11511 to 11532 FIRE CONTROLMAN, ROUTINE MAINTENANCE (FC, Routine Maint)

Under supervision, runs routine checks and tests on fire control circuits and equipment, and operates equipment at general quarters; performs routine electrical and mechanical repairs under general supervision, such as replacing insulation, replacing brushes in electric motors, replacing simple parts in lead computing sights, and making simple adjustments to synchro systems. May assist with major repairs of equipment in the capacity of learner and helper.

Assign classification code below depending upon type of director system on which primarily qualified:

11511 Mk 37 Director System

11512 Mk 33 Director System

11513	Mk 35 Director System
11521	Mk 34, Mk 38, or Mk 54 Director System
11528	Obsolete (Mk 32 Director System or Below)
11531	Mk 52, Mk 57, or Mk 63 Director System
11532	Mk 51 Director

24210 RADIO OPERATOR, RECEIVING-TRANSMITTING
(Radio Opr, Recg-Transmitting)

Receives and transmits radio messages on various types of circuits aboard ship or at a shore station; tunes equipment and adjusts controls for volume and clarity; receives International Morse Code or voice over headphone, and types messages in either plain language or code groups; transmits messages by voice or key; keeps accurate circuit logs. May decipher or encipher headings and call signs.

45110 GRADING FOREMAN

Supervises earth moving work involved in the construction of such utilities as sewer and water lines, roads, airfields, building excavations, and under water excavations. May use level and transit to make spot surveys.

54111 AIRCRAFT METAL WORKER, A&R (Aircraft Metal Wkr, A&R)

In addition to duties performed by Aircraft Metal Worker, Line Maintenance, makes major metal repairs in

A&R shop, such as reconstructing badly damaged fuselage, wings, elevators, hatches, cowling, bomb bay doors, and empennage; lays out, fabricates, and carries through to completion the assembly and installation of large sections of airplane. May check alignment of reconstructed plane with plumb lines and other devices. May perform welding tasks.

72100 YEOMAN ADMINISTRATIVE (Yeoman, Adm)

Performs responsible clerical and stenographic duties involving comprehensive knowledge of naval correspondence, the Navy filing system, naval organization, naval courts and boards, naval personnel procedures and records, and reports and publications in general. Must be able to take dictation at a minimum rate of eighty words a minute. Usually acquires the necessary qualifications as a flag yeoman or a Captain's yeoman, or as an Executive Officer's yeoman on a large ship.

Altogether some eight hundred jobs have been identified. Some of them, such as the quartermaster samples given above, are representative of seagoing jobs that may be defined rather broadly. The job, "Quartermaster, Basic," is typical of jobs that identify strikers or men of low skill level in various ratings. Other jobs, such as "Fire Controlman, Routine Maintenance," identify men of an advanced and highly specialized skill level. It will be noted that this job title carries several code numbers each of which

identifies a special type of fire control equipment on which the man is especially qualified. An important feature of the classification system is that it is flexible so that new jobs may be readily added and old ones changed as necessary to meet the changing needs of the service. The manual contains instructions on how to obtain a code, title, and description of jobs which are not listed in it.

Industrial Job Classification

Job classification of some kind has been used in industry for a long time. It first started in each small organization and then spread to groups of organizations in each type of industry. It then became used by all industries and activities throughout the nation, but in a loose and uncoordinated manner. Finally about 1933 the U. S. Employment Service, under the Department of Labor, began working on a project to develop a nationally applicable system of occupational classification. By 1934 a temporary list of occupational titles with code numbers had been prepared and were used for statistical reporting. By 1936 the Occupational Titles and Codes for use in Public Employment Offices was published. This book contained a fairly comprehensive list of occupations and code numbers, but was recognized to be inadequate in several respects. Finally in 1939 the Dictionary of Occupational Titles[3] was published. It,

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[3] U. S. Employment Service, Dictionary of Occupational Titles, Part I, Washington: Government Printing Office, June 1939.

along with its latest supplement,[4] is the basis for all industrial job classification in the United States today.

The _Dictionary or Occupational Titles_[5] contains job definitions for over seventeen thousand separate jobs. These are also known by over twelve thousand alternate titles, which brings the total number of defined titles to over nineteen thousand. There are some seven thousand separate code numbers which represent these titles. The smaller number of code numbers is due to the fact that some of the code numbers represent several titles. The latest _Dictionary of Occupational Titles Supplement_[6] adds over six thousand additional definitions and more than two thousand new code numbers to the original work, and there will be additional increases from time to time.

The classification structure of the Dictioary has been worked out on a systematic basis. Every digit in each code number indicates something of the nature of the occupation symbolized. The occupations in the Dictionary are first divided into broad groups or categories on the basis of their over-all nature. The occupations in each of these groups in turn are subdivided a number of times into

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[4] U. S. Bureau of Manpower Utilization, _Dictionary of Occupational Titles Supplement_, Edition III, Washington: Government Printing Office, 1945.

[5] Dictionary of Occupational Titles, _op_. _cit_.

[6] Dictionary of Occupational Titles Supplement, _op_. _cit_.

progressively more limited groups of occupations. The finer the subdivision, and consequently the more limited the group, the higher the degree of occupational similarity between the occupations in the subdivision. The first digits of the code numbers show the broad occupational groups; each successive digit shows progressively more limited groups, and consequently closer occupational relationships. In other words, all codes with the same first digit represent occupations that have certain general characteristics in common; all codes with the same first three digits represent occupations that have a great many characteristics in common; all codes with the same first four digits represent occupations with still more characteristics in common. When all but the last digit are the same the jobs are very similar except for some small detail, which is indicated by the last digit. Table 7 on page 77 shows the major occupational groups and the first digits of their codes.

Complete code number of skilled and semiskilled occupations are six digits in length. All others are five digits in length. The code numbers are written with a hyphen between the first and second digits and a decimal point between the third and fourth digit. Examples are: 6-30.370 and 2-29.62. A couple of examples of job descriptions are given on the following page.

Table 7

MAJOR OCCUPATIONAL GROUPS IN THE DICTIONARY OF OCCUPATIONAL TITLES

First Digit of Code Number	Major Occupational Groups
0	Professional and Managerial Occupations
1	Clerical and Sales Occupations
3	Agricultural, Fishery, Forestry, and Kindred Occupations
4 & 5	Skilled Occupations
6 & 7	Semiskilled Occupations
8 & 9	Unskilled Occupations

Surveyor, Topographical Photography (Profess. & Kin.) 0-64.60 Photographs the topography of the ground from the air, and from such photographs prepares or revises topographical maps.

Cigar Box Repairman (Cigar Box) 6-39.216 Replaces broken or damaged sections of cigar boxes with new sections; examines imperfect boxes for extent and location of damage; knocks damaged section from box with light hammer, and removes nails with nail puller; selects new section of box from stock, fits section to box, and nails securely and neatly to box with hammer; smooths edges of new section with hand plane.

The Navy uses these civilian occupational codes to record the civilian occupational experience of all enlisted men when they first enter the Navy. The code is entered in a space provided on page 4A of the enlisted man's service

record. The man's civilian job title and a brief description of his experience is filled in on page 4B of his record. This information then becomes a permanent part of each man's record and is useful in further training and detailing of men to their naval assignments or billets.

Application of Navy Job Classification

All enlisted men are now given a Navy job title and code and a service type code. The job title and code assigned to a man indicate the highest level of naval duties which he is qualified to perform. They are assigned to each man strictly on the basis of his Navy skills, regardless of what rating or pay grade he may have. In this way men are properly classified even though their highest qualifications are outside of their actual rating. If a man is qualified in several jobs this is indicated on his record, but the highest level job is the one that is always used with his rating and rate for statistical purposes. Classifications are originally assigned to men by classification offices or by the commands to which they are attached. It is the duty of the commands to report changes in their men's classifications whenever new abilities are acquired by them. The job codes and service type codes are particularly well adapted for use in the punched card system of machine record keeping.

In Chapter III it was pointed out that ratings are useful wherever occupation is the level of classification

that is satisfactory. For uses requiring distinctions finer than occupations, however, ratings must be supplemented by additional information. It is in supplying this supplementary information that Navy job classifications have their primary application. Ratings are valuable when men in an occupation are considered as a group, but must be supplemented by job classifications when men are to be considered on the basis of their individual skills and abilities. Among the chief functions in which ratings must be supplemented by job classifications are the following:

Complements, Allowances, and Billets.--Complements, allowances, and billets are outlines of manpower needs for ships and activities. These needs cannot be properly indicated without the use of job classifications. Prior to the development of job classifications, ratings were the best classifications available. It is expected, however, that complements, allowances, and billets will in the future incorporate the use of job classification.

Classification of Men for Duty.--The classification of men for duty involves classification on the basis of their aptitudes, training, and experience. During World War II, classification centers developed many techniques of interviewing and record keeping. The Navy job classification structure is the culmination of these efforts.

Detailing.--Detailing is the function of assigning men to duty and includes assignment to further training as well as assignment to ships and stations. When complements and allowances are in terms of specific job needs and when men have been classified on the basis of job qualifications, detailing becomes a matter of matching men with jobs.

Advanced Training.--Elementary training may well be organized on the basis of occupations; however, advanced training needs to be more specialized. In many instances this specialization may be achieved by organizing such training around Navy jobs.

Further Development of Job Classification

Some eight hundred separate Navy jobs have been defined and coded and more are being added to this list continuously. The U. S. Department of Labor is now in the process of preparing a new edition of the Dictionary of Occupational Titles and is planning to include the Navy job classification system and the Army job classification system as an appendix. The Army has a similar system of job classification whose details differ from both the Navy and the industrial system. Combining the three systems in a single volume will be very helpful; however, a much greater improvement could be made.

Navy job classification and industrial job

classification are both done for the same basic purpose. That is to define the jobs, give them specific titles, and code them in a systematic manner so they can be easily used to classify jobs and indicate the qualifications of men required to fill the jobs. Both systems accomplish this purpose within their own field. However, the coding systems used are entirely different and have absolutely no relationship to each other. For this reason, it is fortunate that the hyphen and decimal point in the industrial system code numbers readily distinguish it from the simple five digit code number of the Navy system. A review of Table 6 on page 70 will reveal that in the Navy system the major groupings, as indicated by the first digit of the code number, are based upon the major divisions of occupations as found in the Navy. On the other hand, a survey of Table 7 on page 77 shows that in the industrial system the major groupings, which are also indicated by the first digit of the code number, are based on an entirely different system which covers the entire civilian occupational field and many of the jobs found in the Navy.

Inasmuch as the Navy now uses both systems in its personnel work and in the event of another emergency will undoubtedly make much more use of the industrial system, it would be a tremendous advantage to both fields, but especially to the Navy, if one system were used throughout the Navy and the industrial world and all code numbers were

interchangeable and had exactly the same meaning. As the industrial system has more than ten times as many jobs defined and coded than the Navy has, and its basic coding system is more comprehensive, it appears that it may be practical for the Navy jobs to be recorded under that system. This possibility is suggested as a problem for further study. This suggestion also applies equally well to the Army system.

A review of current personnel reports reveals that the job classification is not being kept up to date for all enlisted men. This is evidenced by the fact that many high rated men such as chief and first class petty officers still carry basic job codes which normally would be assigned only to seamen recruits or seamen. While these outstanding examples are not extremely common they occur frequently enough to indicate that the classification system is not being carried out properly. It appears that some new system of reporting changes in qualifications would be desirable. It might be practical to require the review and reporting of a man's job code each quarter when the quarterly marks are given. The code number could be reported on the same card as the quarterly marks in an appropriate space. This possibility is also suggested as a problem for further study. In order for the job classification system to function properly and serve its purpose it is obvious that it must be understood, correctly used, and kept up to date.

Summary

With the rapid expansion of the Navy in World War II and with the adoption of new technical equipment, training programs were speeded up and more attention was given to training men for specific jobs rather than for occupations. Also it was recognized that certain civilian skills and experience could be applied directly to certain naval jobs. In order to properly utilize these specialized jobs and skills, it was necessary to identify them much more specifically than was practical under the traditional Navy rating structure. It was for this purpose that the system of Navy job classification was established to supplement the rating structure.

Navy job classification is a system which assigns a title, a brief definition, and a five digit code number to each of the hundred of jobs performed by enlisted personnel on all the ships and stations throughout the Navy. In addition to his rating and pay grade, which indicate his occupation and general skill level, each enlisted man has a job classification which indicates the specific work for which he is best qualified. In addition to the five digit job code he is assigned a two digit service type code which indicates the type of ship or activity where the man acquired the qualifications for his Navy job. This is done because it is helpful to know whether a man was trained at a school or

aboard ship, and if the latter, aboard what type of ship. The Manual of Enlisted Navy Job Classifications lists some eight hundred jobs along with their titles and descriptions, and explains the use of the system.

Job classification has been practiced by industry for a long time and a recent development in this field is the Dictionary of Occupational Titles which defines and classifies over twenty thousand separate jobs and assigns code numbers to them. This classification structure is very broad and comprehensive and has been developed on a very systematic basis with provisions for additions which are constantly being made. The Navy uses this system to record the civilian experience of men who enter the Navy.

In practice each man is assigned a job title and code number, along with a service type code number, in accordance with his qualifications. These numbers, and sometimes the titles, are entered on pertinent personnel records and communications along with the man's rate and rating. The chief function in which these job codes are used are in: (1) the preparation of complements, allowances, and billets; (2) the classification of men for duty; (3) the detailing of men to their various assignments; and (4) for the organization of advanced training.

A new edition of the Dictionary of Occupational Titles is now being prepared and it is planned to include the Navy job classification system and also that of the Army

as an appendix. While the general features and the purpose of the industrial classification system and that of the Navy are the same, the details, particularly in the coding system, are quire different. It appears practical to convert the Navy system into the larger more comprehensive Dictionary of Occupational Titles system, so that any particular job would have only one number and it would be the same in both systems.

A review of current personnel reports indicates that the job classifications of the men are not being kept up to date in all cases. If the system is to function properly, it is important that all this information be kept current and used. It is possible that the assignment of job codes at the time, and on the same cards, that the quarterly marks are recorded would aid in keeping the codes current.

It is important that all officers and all men engaged in personnel work be familiar with the Navy job classification system and understand its use. Until this is done the service will not derive all the possible benefits from the system.

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